Effects of alpha-tocopherol and beta-carotene supplements on cancer incidence in the Alpha-Tocopherol Beta-Carotene Cancer Prevention Study

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Abstract: The Alpha-Tocopherol Beta-Carotene (ATBC) Cancer Prevention Study was a placebo-controlled, randomized intervention trial testing the hypothesis that beta-carotene and alpha-tocopherol (vitamin E) supplements prevent lung and other cancers. The study is predicated on a substantial body of evidence supporting a role in cancer prevention for these micronutrients. Based on the 2 x 2 factorial study design, 29,133 eligible male cigarette smokers aged 50-69 y were randomly assigned to receive beta-carotene (20 mg), alpha-tocopherol (50 mg), beta-carotene and alpha-tocopherol, or placebo daily for 5-8 y. Capsule compliance was high (median = 99%). beta-Carotene treatment did not result in a decrease in cancer at any of the major sites but rather in an increase at several sites, most notably lung, prostate, and stomach (number of cases 474 compared with 402, 138 compared with 112, and 70 compared with 56, respectively). The vitamin E group had fewer incident cancers of the prostate and colorectum compared with the group not receiving vitamin E (number of cases 99 compared with 151 and 68 compared with 81, respectively), but more cancers of the stomach (70 compared with 56). In contrast to these intervention-based findings for beta-carotene and vitamin E supplements, we observed lower lung cancer rates in men with higher amounts of both serum and dietary beta-carotene and vitamin E at baseline.